



# Integrating Hybrid Clouds with Microsoft Azure

Delivery: Instructor Led and Virtual

Duration: 3 Days

Training Units: 36

## Course Description

Learn to implement a hybrid cloud solution with Microsoft Azure by using NetApp® Cloud Volumes ONTAP®. Connect an Azure Virtual Network (VNet) and an on-premises data center to unify your infrastructure. Use NetApp Cloud Manager to move data and manage storage in the hybrid cloud. Learn about how NetApp cloud services are integrated into Cloud Manager to provide persistent storage for Kubernetes containers and enhance data protection, security, and compliance. Learn to optimize capacity and performance of Cloud Volumes ONTAP.

## Audience

Administrators, operators, architects, and implementation engineers

## Prerequisites

For a successful learning experience, NetApp recommends that you know the following concepts before you attend the course.

### Cloud computing concepts:

Cloud characteristics, service delivery methods, and cloud deployment models

### Networking concepts and definitions:

Classless Inter-Domain Routing (CIDR) and network address translation (NAT)

### Azure concepts:

Subscriptions, VNet, virtual machines (VMs), Azure storage accounts, and Azure Blob storage

## Objectives

- Describe how NetApp technologies can be used to build your data fabric
- Configure a VNet and connect it to an on-premises data center with VPN Internet Protocol security (IPsec)
- Describe Cloud Volumes ONTAP architecture
- Install a Connector and deploy Cloud Volumes ONTAP
- Explain basic system administration tasks with Cloud Manager
- Copy data between an ONTAP based system and Cloud Volumes ONTAP for Azure for disaster recovery
- Use data tiering to Azure Blob storage for Cloud Volumes ONTAP
- Use Cloud Volumes ONTAP as persistent storage for Kubernetes containers
- Identify performance and sizing options for Cloud Volumes ONTAP

## Course Content

Module	Lessons	Exercises
<b>Module 1: Data Fabric Overview</b>	<p>Lesson 1: Data Fabric</p> <p>Lesson 2: Solutions for the Hybrid Cloud</p> <p>Lesson 3: NetApp Public Cloud Products</p> <p>Lesson 4: Cloud Storage</p> <p>Lesson 5: Cloud Services and Analytics</p> <p>Lesson 6: Cloud Controls</p>	<p>Exercise 1: Controlling Cloud Resources with Azure CLI</p> <p>Exercise 2: Controlling Cloud Resources with Azure PowerShell</p> <p>Exercise 3: Controlling ONTAP (On-Premises) Resources with NetApp PowerShell Toolkit</p>
<b>Module 2: Public Cloud Essential Concepts</b>	<p>Lesson 1: Azure Networking and Other Concepts</p> <p>Lesson 2: Terraform Introduction</p>	<p>Exercise 1: Configuring Resources in Azure Using Terraform</p> <p>Exercise 2: Reviewing Resources Using the Azure Portal</p> <p>Exercise 3: Verifying Connectivity to the VMs in Front-End and Back-End Subnets</p>
<b>Module 3: Connectivity from the Public Cloud to Other Networks</b>	<p>Lesson 1: Microsoft Azure VNet Connectivity to an On-Premises Network</p>	<p>Exercise 1: Connecting Azure VNet to an On-Premises Network</p> <p>Exercise 2: Configuring On-Premises DNS for Azure VMs</p> <p>Exercise 3: Joining an Azure VM to Active Directory in On Premises network</p>
<b>Module 4: NetApp Cloud Manager</b>	<p>Lesson 1: NetApp Cloud Manager Overview</p>	<p>Exercise 1: Deploying a Connector</p>
<b>Module 5: NetApp Cloud Volumes ONTAP: Single-Node Architecture</b>	<p>Lesson 1: Cloud Volumes ONTAP</p> <p>Lesson 2: Cloud Volumes ONTAP: Use Cases</p> <p>Lesson 3: Cloud Volumes ONTAP Architecture</p> <p>Lesson 4: Deploying Cloud Volumes ONTAP</p> <p>Lesson 5: Cloud Volumes ONTAP Supported Features</p>	<p>Exercise 1: Deploying a Single-Node Cloud Volumes ONTAP Instance</p> <p>Exercise 2: Creating an NFS Volume and Accessing It from an NFS Client</p> <p>Exercise 3: Creating an SMB volume and Accessing it from an SMB Client</p>
<b>Module 6: NetApp Cloud Volumes ONTAP: High-Availability Architecture</b>	<p>Lesson 1: Highly Available Cloud Volumes ONTAP in Azure</p>	<p>Exercise 1: Deploying a Cloud Volumes ONTAP High-Availability Pair</p>
<b>Module 7:</b>	<p>Lesson 1: Administering Cloud Volumes ONTAP</p>	<p>Exercise 1: Using Cloud Manager for Basic Administration of Cloud Volumes</p>

Module	Lessons	Exercises
<b>Administration of NetApp Cloud Volumes ONTAP and NetApp Cloud Manager</b>	Lesson 2: Administering Cloud Manager	ONTAP Exercise 2: Doing Basic Administration of Cloud Manager
<b>Module 8: Implementing Disaster Recovery with NetApp Cloud Volumes ONTAP</b>	Lesson 1: Disaster Recovery with Cloud Volumes ONTAP Overview	Exercise 1: Configuring and Managing Disaster Recovery in the Data Fabric
<b>Module 9: Data Tiering for NetApp Cloud Volumes ONTAP</b>	Lesson 1: Data Tiering for Cloud Volumes ONTAP Overview	Exercise 1: Tiering Backup Data to Azure Blob Storage
<b>Module 10: Using NetApp Cloud Manager to Provision Persistent Storage for Kubernetes Clusters</b>	Lesson 1: Using Cloud Manager to Provision Persistent Storage for Kubernetes Clusters Overview	Demonstration videos provided
<b>Module 11: Using Integrated Services from NetApp Cloud Manager</b>	Lesson 1: Using Cloud Backup Service from Cloud Manager Lesson 2: Using Cloud Sync from Cloud Manager Lesson 3: Using Cloud Compliance from Cloud Manager Lesson 4: Using Cloud Tiering Service from Cloud Manager	Demonstration videos provided
<b>Module 12: Sizing NetApp Cloud Volumes ONTAP</b>	Lesson 1: An Introduction to Sizing Lesson 2: Capacity Sizing Lesson 3: Performance Sizing Lesson 4: Single Node versus High Availability Lesson 5: Key Differences between Cloud Volumes ONTAP and On-Premises ONTAP Software Lesson 6: Performance Tuning Lesson 7: Frequently Seen Sizing Mistakes	Exercise 1: Exploring the TCO Calculator and Sizer Tools